

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the present application.

LISTING OF CLAIMS:

1. (Currently Amended) A planar sensor element for determining at least one gas component, comprising:

a layer structure including:

a measuring cell layer;

a covering layer; and

a heating element disposed directly between the measuring cell layer and the covering layer and generating a heating power, a layer-shaped heating conductor being embedded in the heating element in a layer plane of the layer structure;

wherein the layer plane is at least approximately vertically centered with respect to the sensor element, the measuring cell layer, covering layer and layer plane extending in a horizontal direction; and

wherein the covering layer adjoins the heating element on a side of the heating element facing away from the measuring cell layer and does not form part of an oxygen pump cell or an oxygen concentration cell; and

wherein the covering layer extends from the side of the heating element facing away from the measuring cell layer to an end face of the planar sensor element.

Claim 2. (Canceled).

3. (Previously Presented) The planar sensor element according to claim 1,

wherein the planar sensor element is formed using a sintering process,

wherein, before the layer structure is sintered, the measuring cell layer includes at least two measuring cell layer foils and the covering layer includes at least one covering layer foil, the covering layer foil having a predetermined thickness, and

wherein a total thickness of the at least two measuring cell layer foils is at least approximately equal to the predetermined thickness.

4. (Previously Presented) The planar sensor element according to claim 3, wherein the layer structure includes a further layer having a further thickness, and wherein the total thickness includes the further thickness.

5. (Previously Presented) The planar sensor element according to claim 1, wherein the layer structure further includes a plurality of electrically insulating layers, a first thickness of one of the electrically insulating layers being approximately equal to a second thickness of another one of the electrically insulating layers, and wherein the heating conductor is embedded in the electrically insulating layers, the electrically insulating layers being formed on both sides of the heating conductor.

6. (Original) The planar sensor element according to claim 5, wherein the layer structure further includes a sealing frame surrounding the electrically insulating layers, the sealing frame having a frame thickness which is equal to a thickness of the electrically insulating layers.

7. (Original) The planar sensor element according to claim 6, wherein the electrically insulating layers include two electrically insulating layers.

8. (Previously Presented) The planar sensor element according to claim 1, wherein the layer-shaped heating conductor is arranged in the layer plane of the layer structure to obtain an at least approximately homogeneous distribution of the heating power over a cross-section of the sensor element perpendicular to the layer structure.

9. (Previously Presented) The planar sensor element according to claim 1, wherein the cover layer comprises an entirety of the planar sensor element on one side of the heating element.

10. (Previously Presented) The planar sensor element according to claim 1, wherein the covering layer is made from stabilized zirconium oxide.

11. (Previously Presented) The planar sensor element according to claim 1, wherein the measuring cell layer contacts a first planar surface of the heating element and the covering layer contacts a second opposing planar surface of the heating element.

12. (Previously Presented) The planar sensor element according to claim 1, further comprising a sealing frame around the heating element configured to seal the heating element in a gas-tight manner.

13. (Currently Amended) A planar sensor element for determining at least one gas component, comprising:

a layer structure including:

at least one of an oxygen pump layer and an oxygen concentration layer;

a covering layer; and

a heating element generating a heating power disposed directly between the covering layer and the at least one of a oxygen pump layer and oxygen concentration layer, a layer-shaped heating conductor being embedded in the heating element in a layer plane of the layer structure;

wherein the layer plane is at least approximately vertically centered with respect to the sensor element, the (i) at least one of an oxygen pump layer and an oxygen concentration layer, (ii) covering layer and (iii) layer plane extending in the horizontal direction; and

wherein the covering layer adjoins the heating element on a side of the heating element facing away from the measuring cell layer and does not form a part of another oxygen pump cell or another oxygen concentration cell; and

wherein the covering layer extends from the side of the heating element facing away from the measuring cell layer to an end face of the planar sensor element.

14. (Currently Amended) A planar sensor element for determining at least one gas component, comprising:

a layer structure including:

a measuring cell layer having at least one surface;

a covering layer; and

a heating element disposed directly between the measuring cell layer and the covering layer and generating a heating power, a layer-shaped heating conductor being embedded in the heating element in a layer plane of the layer structure; and

at least one electrode, each electrode arranged on a respective surface of the measuring cell layer;

wherein the layer-shaped heating conductor is arranged in a layer plane of the layer structure to obtain an at least approximately homogeneous distribution of the heating power over a cross-section of the sensor element perpendicular to the layer structure;

wherein the layer plane is at least approximately vertically centered with respect to the sensor element, the measuring cell layer, covering layer and layer plane extending in the horizontal direction; and

wherein the covering layer adjoins the heating element on a side of the heating element facing away from the measuring cell layer and does not form part of an oxygen pump cell or an oxygen concentration cell; and

wherein the covering layer extends from the side of the heating element facing away from the measuring cell layer to an end face of the planar sensor element.